The Antique Radio Gazette

OFFICIAL PUBLICATION OF THE ANTIQUE RADIO CLUB OF AMERICA

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MR. HARRY SHOEMAKER
Advisory Engineer, United States
Wireless Telegraph Co.

OFFICERS OF ARCA:

President: Lloyd McIntyre
4204 Thorn Apple Lane
Charleston, W. Virginia 25313

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Editor:
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P.O. Box 942
23 East Wharf Road
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It is our intention to have the Gazette published as closely as possible to the following dates:

March 31 — June 30
September 30 — December 30

The closing dates for receiving material of all kinds in order to have it appear in the next issue would be:

February 15 — May 15
August 15 — November 15

The Antique Radio Gazette is published quarterly in Madison, Connecticut.

Yearly dues of $12.00 U.S. currency are payable to ARCA January 1, of each year for members in the USA, Canada, and Mexico. Overseas dues are $14, which includes airmail postage.

The Antique Radio Club of America was incorporated in the State of Kentucky, in September, 1972. The first meeting was held at the Marriott Motor Inn, Washington, D.C., on September 23, 1972. At this meeting, by-laws were read and approved and directors selected. We feel that the inceptionof this Club is a giant step in bringing together those indivuduals whose chief interest lies in the area of early radio. We invite all collectors and historians of the subject to join the Club. A note to William E. Denk, Secretary, 81 Steeplechase Road, Devon, Pennsylvania 19333, will bring you an application blank by return mail.

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The printer apologizes for the quality of the photo of Harry Shoemaker and the 106-D on page 5. The Shoemaker photo is the only one in existance and we did the best we could. The 106-D is also a very old print and to try and hold the type the background came through.

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President's Page

It is that time of year when some will have to shovel a path to the mailbox in order to retrieve their winter issue of the Gazette, while others will fight heat stroke and surely great beads of perspiration on the brow to get theirs. It is the one issue where we all face the extremes of weather—faithfully tuning the radio dial to hear our favorite meteorologist give us that invariable 50% probability of weather for tomorrow.

We have some rather cheery news to report, and I believe important to the continued growth of our club. Our club enjoyed one of its largest new membership enrollments for a one-month period in its history this year. With this in mind, and as a way to encourage continued membership, the Board of Directors implemented a "Five Year Membership Program." Not only is this a great advantage to the member, but a real plus for your club in the way of better projecting cash flow, retention of members and savings in bookkeeping time. The program is outlined elsewhere in the Gazette by our Secretary/Treasurer.

In the past few years, we had experienced some difficulty in providing accounting methods leading up to and including our national conferences to provide adequate planning that would allow our annual meets to self-sustain. I am now pleased to report that with the conclusion of our Washington, D.C. conference, we are operating in the "black" and providing what I and others believe to be first class meets. I am sure our Treasurer will make mention of the figures involved. We were able to mail a check in excess of $700.00 to the Mid-Atlantic Club, which hosted our '87 conference, and also deposited the same in our account. We have maintained this positive situation now for two (2) years in a row and believe it gives our Planning Committee the confidence they need in putting together the next year's conference. I want to thank all who helped in this very important effort.

Our Director's meeting in Canandaigua this past September was one of the most rewarding, in terms of the continued growth of ARCA. Because of our continued good financial health, the Directors authorized a 50% increase in the size of the spring edition of the Gazette. This does not come without the help of everyone. It gives us an opportunity to increase the pre-conference coverage of our annual meet, obtain larger articles—of which each of you can be a contributor—and add additional prestige to the already prestigious J. A. Moore Editorial Award.

The officers and directors are always grateful for the input from each of you. If you have a suggestion or comment, just drop any of us a note to the address that appears on the opposite page. You may want to be a part of our '88 conference with a special program or just help with part of the volunteer services—let us know.

Patsy and I wish you a grand '88 and look forward to hearing from or seeing you in the NEW YEAR!

Lloyd McIntyre

ARCA
ANTIQUE RADIO CLUB
of AMERICA

NEW FIVE-YEAR MEMBERSHIP PLAN
A NOTE FROM THE SECRETARY/TREASURER

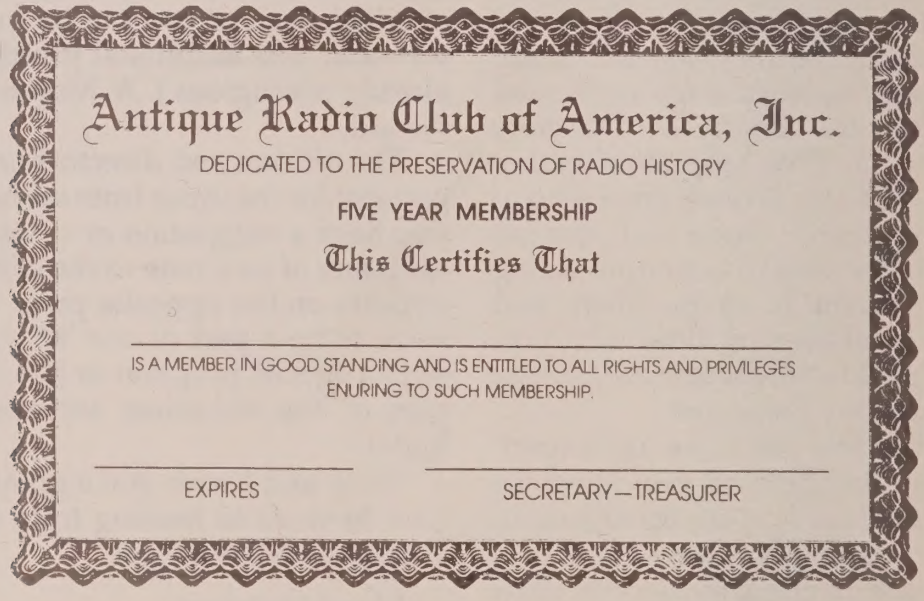
Pursuant to action of the ARCA Board of Directors, taken 24 September 1987, a new, special Five-Year Membership Plan has been established. The Club's regular, annual (one-year) membership remains at $12.00 (U.S.) per year for members residing in the U.S. and its possessions, and also in Canada and Mexico, and at $14.00 (U.S.) per year overseas.

But members are now given the option of renewing their membership for a five year period (for example, 1988 through 1992) at a $10.00 savings. Five-Year dues are as follows:

U.S., Canada and Mexico	$50.00 U.S.
Overseas	$60.00 U.S.

save the otherwise yearly task and expense of obtaining a foreign bank draft made out to ARCA in U.S. dollars. Fourth, the five-year plan provides a way for the dedicated member to show his commitment to the Club's long-range goals, and for which he will receive a special Five-Year Membership card.

Because ARCA memberships are all based on the normal calendar year, dues are always payable in January, regardless of the month in which membership was actually taken out. Therefore, now is the time to renew your membership, and to decide whether renewal shall be for a ONE or FIVE year period.


Antique Radio Club of America, Inc.

DEDICATED TO THE PRESERVATION OF RADIO HISTORY

FIVE YEAR MEMBERSHIP

This Certifies That

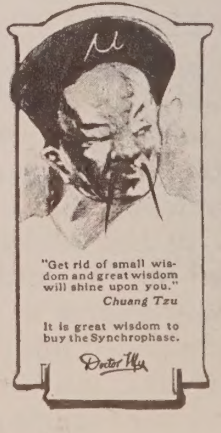
_____

IS A MEMBER IN GOOD STANDING AND IS ENTITLED TO ALL RIGHTS AND PRIVILEGES ENURING TO SUCH MEMBERSHIP.

_____ EXPIRES

_____ SECRETARY—TREASURER

There are several advantages to members in this plan. First, it ensures, for a five year period, against increases in dues occasioned by inflation and increased costs of publication and distribution. Second, it avoids the annual danger of inadvertently failing to renew, and ensures five uninterrupted years of membership without the nuisance of writing a check annually. Third, of interest to members residing outside the United States and its territories, it will



Thorn L. Mayes, W6AX

Thorn L. Mayes died on July 27th 1987 in Durango, Colorado. All radio historians are saddened by this great loss.

Thorn Mayes was exceptionally well-qualified to document wireless history. As an engineer he understood wireless technology and as a retired manager in a large corporation he understood the workings of business.

His career spanned the period from spark to solid state. It began in high school with a one kilowatt spark wireless station. He continued his interest in electricity and graduated with honors in Electrical Engineering at the University of California, Berkeley, in 1927. From high school to college graduation he worked in the summer as a stationary steam engineer in the California oil fields. After graduation he completed the General Electric Company's test course at Schenectady, New York. His first assignment was designing large induction motors. In 1930 he transferred to the GE works in Oakland, California where he designed the hollow shaft vertical induction motors which drove deep well pumps that played such a prominent part in opening vast areas of the west to farming.

In World War II, Thorn Mayes was engineer and Superintendent of the GE Oakland motor plant and in 1949 became assistant to the Manager of GE engineering at Schenectady. In 1950 he moved farther east to Lynn, Massachusetts as Engineering Manager of direct and alternating current motor production.

In 1953 he planned, built and operated an entirely new GE facility to manufacture induction motors at Fort Wayne, Indiana. In 1958 he was made Engineering Manager of the GE steel mill electric furnace plant in Shelbyville, Indiana. He remained there until 1963 when he retired and moved to Saratoga, California, later moving to Durango, Colorado.

Mr. Mayes was a registered Professional Engineer in the states of California, Massachusetts, and New York. In California he held this rank in both electrical and mechanical engineering.

Thorn Mayes grew up with wireless, holding a succession of amateur radio station calls including 6AX, W2CE, W1CX, and W6AX. He had the good fortune to have known many of the great wireless innovators and for years he carried on correspondence with a number of them. It is given to few people to live a life as full as Thorn's. He was fortunate to have an especially good measure of curiosity, imagination, industry and discipline; all qualities which have prompted him to study, inquire and travel; and this travel has included Europe, Africa, Antarctica, South America, Alaska, and the South Seas.

He has performed interesting and original experiments with spark transmitters, high voltage generators and steam engines. His work on induction generators has resulted in a method to optimize the dimensions of these machines. He was a master model maker—totally at home in a well-equipped machine shop. For many years a few lucky radio historians have received splendid replicas of early wireless apparatus at Christmas, the output of his Mayeskit Productions.

Thorn Mayes, who understood the technology, did not dismiss the work of some wireless pioneers as mere tinkerings but recognized and pointed out that this work was often the result of high-level analytical reasoning as well as good practical engineering. He has given credit where it has long been overdue to people like Harry Shoemaker, Goddard, Fuller and other capable engineers such as those who built Tuckerton, Sayville and particularly the Federal arc stations.

Mr. Mayes served as Honorary Director of both the New England Wireless and Steam Museum, East Greenwich, Rhode Island and the Perham Foundation, Foothill Electronic Museum, Los Gatos, California. He served as a member of the Antique Wireless Association's Advisory Board and was a member of the AWA's Houck Award Committee. He was Honorary Member of the Antique Radio Club of America and technical Advisor to the Society of Wireless Pioneers. He was a life member of the Institute of Electrical and Electronic Engineers, the American Society of Mechanical Engineers, and the Society of Wireless Pioneers. Other affiliations were The American Radio Relay

League, The Old Old Timers Club, the Quarter Century Wireless Association, The Radio Club of America, The Veteran Wireless Operator's Association and the Electrostatic Society of America.

Robert W. Merriam

Contributions in Thorn's memory may be given to the Mayes Memorial Building Fund care of The New England Museum of Wireless and Steam, 697 Tillinghast Road, East Greenwich, R.I. 02818.

Thorn Mayes was an honorary member of ARCA. Shortly before his death, he authorized ARCA to publish this paper in the Gazette. Due to its length, it will be published in three parts. It is not often that such a learned article on early wireless history is published in the Gazette. We are fortunate that Thorn permitted us to publish this story, one of his final studies.

Jim Troc
ARCA Past President

THE NEW ENGLAND MUSEUM OF WIRELESS AND STEAM, INC.
were kind enough to cooperate with ARCA for this article

HARRY SHOEMAKER

An Overlooked Wireless Telegraph Pioneer
by Thorn L. Mayes

In Nov. 1971, Lloyd Espenschied[1] sent me a number of documents dealing with the early history of wireless. He was one of the few remaining Old Timers who lived through the period and for many years was the historian for the Institute of Radio Engineers, so he was very familiar with that history.

Included with the papers was a memo he had written in 1963 which is quoted in part.

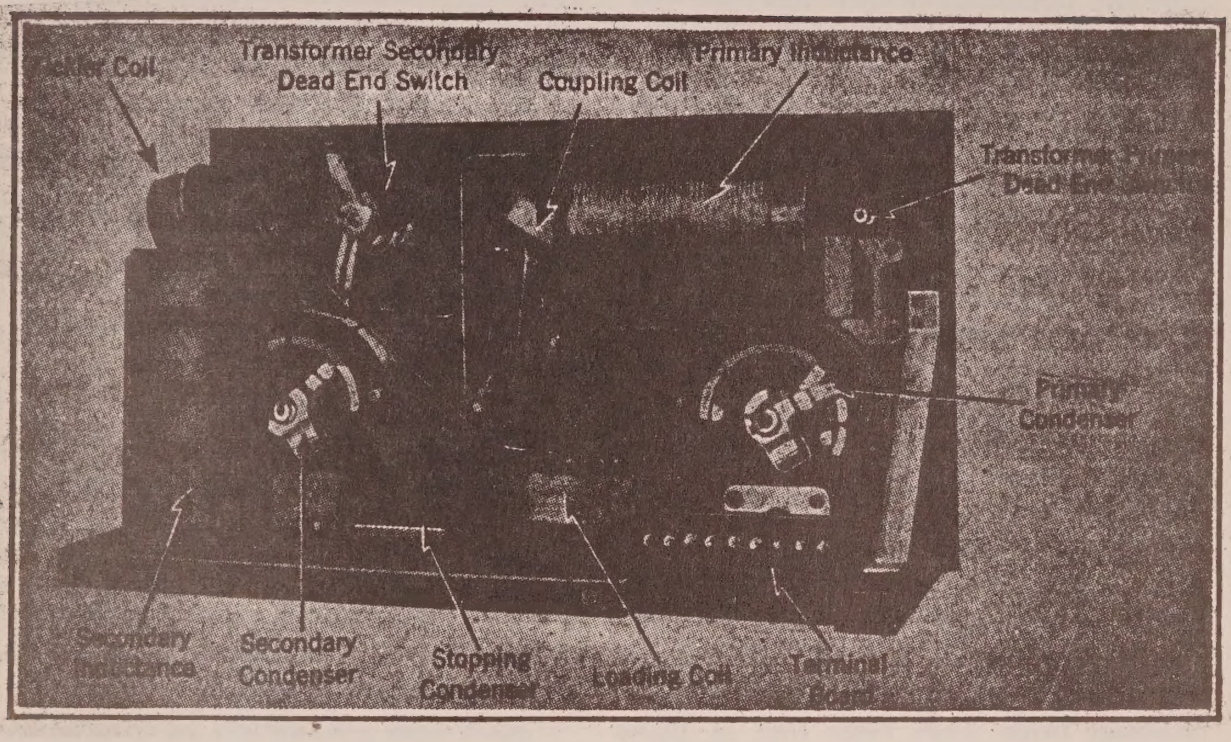
"When I was a wireless telegraph operator aboard ship for the United Wireless Telegraph Co., summers of 1907 and 1908, I was given to understand that the spark transmitters then used by United, bearing the insignia of the American DeForest Wireless Telegraph Co., had been designed by Harry Shoemaker. Those transmitters were notably superior to the spark-coil transmitters of the Marconi equipments of the time, for they used alternating current derived from a motor alternator set, and an open-core transformer, whereby more power was had. Hence, my interest in Harry Shoemaker."

He closes with this paragraph. "Altogether, we see here just enough to indicate it was Shoemaker who provided the technical substance that made successful the American DeForest Co. and enough to call for more information on this overlooked personage. Has there appeared somewhere a biography of him? Who can supply the missing links?"

Here was a real challenge. In collecting information on early wireless companies, I had seen frequent references to Shoemaker. He was a prolific inventor, having over 100 patents by 1912.[2] His practice was to assign 49% of the patent

1. Lloyd Espenschied worked for United Wireless, then went with AT&T, working on development of ship to shore radio telephone communication equipment. He was one of the inventors of coaxial cable.

2. Number obtained from review of his patents listed in Patent office directory by years.



Rear interior view of the type 106-D, typical of Shoemakers design.

ownership to the company he worked for, keeping a 51% control to himself so it was possible by this means to follow his technical career to 1916. He was a founding member of the Wireless Institute and of its successor, the Institute of Radio Engineers, but in 1919 he dropped out of IRE.

Dr. A.N. Goldsmith, also a founding member of IRE told me[3] in 1972 that he remembered Shoemaker well, that he was an excellent engineer, was V. Pres. of the Wireless Institute and presented technical papers to both organizations but did not attend many meetings and did not mix very much with the other members. He pointed out that in those days the patent situation was very critical and this may have been the reason for Shoemaker's attitude.

In December 1972 I located a relative, Harry F. Shoemaker,[4] of Toronto Canada,

3. Telephone contact in 1972.

4. Letters from Harry S. Shoemaker to T.L. Mayes 1972–1974.

a retired wireless operator for the Canadian Marconi Co., who confirmed my material on Shoemaker's technical career, and added personal data, as he had followed the original Harry Shoemaker's career closely.

Elliot Sivowich, of the Smithsonian Institution, supplied copies of testimony given at a 1903 patent suit, "Marconi Wireless Telegraph Co. vs American deForest Wireless Telegraph Co.[5] in which Shoemaker gives much information on his early experiences.

In 1972 Mr. P. R. Mallory, then 78 years old, supplied information on the period 1917–1932, when Shoemaker worked for two of his companies. Many others have given information for this paper for which I am grateful.

Harry Shoemaker was born in Millville, Pennsylvania May 11, 1879.[6] He attended school in Millville and for his last two years in high school had for science teacher Prof. Henry Russell. Prof. Russell must have been one of those dedicated teachers who inspired his students by performing experiments beyond the scope of the texts used. In physics class, he set up demonstrations of wireless transmission and reception in 1894, when little was known about this subject. Shoemaker was so interested in the experiment that he frequently worked with Prof. Russell after regular hours and early in 1895, assembled his own wireless set in his father's planing mill. He was able to receive signals up to 150 feet with his equipment.

Shoemaker carried on these experiments in 1895 and early 1896. He then entered Penn State College in September 1896.[7] He states that his equipment was the same as that used by Prof. Russell, except for a de-coherer he made.

His transmitter consisted of a spark coil connected across a spark gap which was grounded on one side, the other side connected to an aerial. He noted a marked increase in signal strength if a high voltage condenser was connected across the spark gap.

His receiver consisted of a coherer connected to the aerial and ground with a galvanometer in series with the coherer and a battery. The galvanometer had an extension on its needle which struck the coherer and de-cohered it when a signal was received. It is interesting to note that the equipment that in 1895 was assembled and operated by a high school student, was almost exactly the same as that shown on Marconi's patent application of 1896. Shoemaker was investigating an interesting subject and did not think of applying for a patent on his work. He continued his experiments with this equipment when home from college vacations, through 1899.

Soon after graduation, he entered the employ of Dr. Gustav Gehring of Philadelphia, who had heard of his wireless experiments, and on Nov. 10, 1899 when Gehring founded the first wireless operating company in the U.S., the American Wireless Tel. & Tel. Co.,[8] Shoemaker was made chief engineer.

American was a holding company to supply the wireless system, technical assistance, patent protection and equipment to nine operating companies that were formed in mid 1901, each assigned sections of the U.S. as their operating areas. The whole scheme was one of stock promotion as Gehring did not plan to provide a communications service.

Robert Marriott[9] who went with American as an engineer in early 1901 states that they built stations on the East coast at Galilee, Briele and Barnigate, N.J., plus a temporary shipboard station for reporting the America's Cup Yacht

5. Material from 1903 patent suit, Wireless Telegraph Co. of America vs DeForest Wireless Telegraph Co., on reissue of patent # 11913, U.S. Circuit court Southern District of N.Y. in equity # 822.
6. Ibid From testimony of Harry Shoemaker Oct. 1903.
7. Ibid.
8. Data from incorporation papers, Territory of Arizona.
9. From an unpublished book, "Our Radio Ancestors," by Robert Marriott, located in the IEEE library in New York City.

races held the fall of 1901. Marriott had a high regard for Shoemaker's technical ability, who by the end of 1901, had obtained 23 patents on wireless equipment.

North Western Wireless Tel. & Tel. Co., one of the American operating companies, erected stations at Chicago and Milwaukee and demonstrated marine use of wireless by installing and operating sets on one of the Pere-Marquett ferries. Shoemaker was also the chief engineer of this company and directed the experiments.

(To be continued

NEWS FROM CHARLESTON NOVEMBER '87

The Charleston, WV chapter's annual picnic was held at the home of Grace and Geoff Bourne on October 3. Never mind the cold, rainy weather that day, because there were 15 rooms of antiques and collectibles to go through, not to mention Geoff's vast collection of old radios. For the benefit of those of us not fortunate enough to make it to Canadaigua, Lloyd brought his video tape to give the club a sampling of what goes on up there. Included was Dick Brewster's pre-auction equipment inspection and Ralph Williams' post-contest narration of the old equipment entered in the contest. The tape was very nice considering it was a first attempt and done on the spur of the moment. We are trying to determine if this type of production would enhance the historical documentation of future annual conferences. It may be feasible to make a more professional attempt at the 1988 meet.

Speaking of the 1988 meet. . . can you believe there will be only one more Gazette before it comes around? Where does the time go? Anyway, preparations are well under way for the 1988 meet to be held here in Charleston, WV. The seminars and tours have already been determined. We'll have full details in the spring issue of the Gazette.

Looking back at this year's national meet, we found that we failed to mention a very important award. The winner of the J. Albert Moore Editorial Award was Jim McKinnon of Bridgewater, NJ. The award is presented annually to an individual for an outstanding article or series of articles published in the Gazette. Remember, it could be awarded on a single article, if in the eyes of the judges it is unique or of vast interest. Our sincere congratulations to Jim!

In the last issue of the Gazette, I described the circumstances leading up to the establishment of the J. Albert Moore Memorial Library here in Charleston and said that if you had any books you would like to donate, we had a real nice home for them. The Library has really been an addition to our modest meeting area and we would like to see it continue to grow. So again, I ask that if you have any books you don't want or if you have duplicates of some of the books in your collection, why not send them to the following address:

J. Albert Moore Memorial Library
c/o W. Blaine Smith
721 Lower Donnally Rd.
Charleston, WV 25304

Finally, I sure was glad to hear about the 5 year membership for the national members. The current annual dues are $12.00, while the 5 year plan is $50.00. That's a saving of $10.00 off the annual dues, plus it's price protected against the possibility of future increases in dues. It takes a tremendous effort to maintain the paid membership on an annual basis. I'm sure Jane and Bill Denk will agree this will be a god-send for them. So why not participate in this if you can. It's for the good of the national organization and it's a savings for everyone. Each participant will receive a pin and a 5 year membership card.

That's enough for now. On behalf of the Charleston Chapter, may God's blessings enrich you and yours in the coming year.

W. Blaine Smith
Reporter

MEL'S CORNER

Just to show you what can happen when a pile of old radio parts show up in a flea market—here is an example!

I recently wandered into a pile of pure junk in one of these places—apparently it must have been the over-flow of somebody's trash can. Kicking a few items aside on the ground with little interest, I spotted the remains of a De Forest honey-comb coil. Oh boy!!—let's dig further!!

Some nice oak boards then appeared reminiscent of a Grebe cabinet?? Then sure enough near the bottom of the pile out comes a Grebe CR-9 panel with of all things the variometer and condenser still attached! Rheostats and jacks still there—but tube section and audios all gone! Further digging through the pile to no avail—nothing!!

So, what do you do with just a panel and a couple of parts plus some oak boards? Back to the work-shop and some polishing. Panel looks great! So do the rest of the parts on there that survived. To restore this one to original—no way!!! Grebe parts are tough to find. Old bus-bar wiring, new solder joints, a Mickey-Mouse appearance when restored—who needs it? Could do—if you live long enough—but then? A half-way-non-original Mickey!

Anyway the oak boards go back together and the panel fits in nicely. Looks like the real McCoy on the outside, but inside—all that blank space? Digging around, I find a three-gang Fada tube socket that mounts perfectly on the panel. Three old tubes stuck in there—a slight improvement to looks?

Darn thing looks so great from the outside I decided I need a working radio above the work bench—Presto!!!—that's it!!

Digging around the shop, I come across a small plastic transistor radio—still works. After ripping off the plastic case, I dig out the chassis and the speaker. The stub end of the Grebe tune condenser couples nicely to miniature transistor chassis, affording tuning with the front Grebe dial.

Going a step further, I wire the chassis speaker leads into one of the Grebe jacks. Volume control and off-on switch—just wire in the Grebe rheostat already on the panel. The nine volt transistor battery hides in under the tube sockets—and that's it! But then I want a horn speaker to go with this. I find an old AK horn—only no base. Here sits an old brass lamp base, so, boring a big hole, inserting a chunk of pipe—on goes the horn with the miniature speaker inside.

Now, flipping the Grebe rheostat, plugging in the horn with my Weston phone plug, and tuning with the Grebe dial—out comes station after station—with the old horn sounding like yesterday!!!

It's a utility item now, but I look at this glamorous oldie with a smile on my face every time I flip it on, and with reverence for the great days when Grebe was in its prime!

They say beauty is in the eye of the beholder. I don't recommend this procedure to everybody. But when you find some relic in a trash pile—think twice before you toss it over the hill! It could have some useful purpose.

COMMENTS ABOUT COLLECTING

Everything has a beginning and each type of collecting started at different times. If you want to start with the first, it would probably be some kind of money. Things used as money could have been clothes, sandals or weapons such as spears or arrows, but the thing that was admired the most by both sexes was

coins—convenient to carry and easy to hide. They have been around since the country of Lydia years before Christ. There were other things used as money—shells in the Pacific, wampum by the American Indian and even tobacco in Virginia. Early settlers used it to buy wives sent over from England.

Coins seem to top the list and have lasted the longest. One of the first coins that was popular to collect, and still is, was the silver decadram of Greece with Alexander the Great on it. Since then, many heads of countries, including our own, have put their heads on coins. This makes them easy to identify.

Men and women, when they grow older, remember the days of their youth and interesting things that happened in the prime of their lives. Men today, if they are over 80, may still remember building a radio in the twenties or turning one side of the earphones outward so that a friend could listen to KDKA in Pittsburgh or some other station. One of the proud statements that radio collectors could make was that they had received a signal from Johannesburg, South Africa.

Radio had one thing most collectibles did not have and that was you could build one yourself, or you could carry it home, and the first ones did not take up much room. Telegraphs, telephones and phonographs each had their day, but it did not compare with radio. Railroads lived on in miniature and airplanes attracted some collectors.

Radio battery sets, after a long period, are finding their way into the basements of various museums. Electric sets are probably trying to take their place. Television sets, after a rough beginning, are now just starting to gain popularity among collectors. The early sets are too rare for the average collector and the average collectors are too few for the large supply of later sets. Regardless of what we collect, we could learn something from other collectors.

First, coin collectors have always had a definite code of honor as to condition. Of course, that is easy with coins. You can see the condition by just turning it over. There are many different classifications as to wear and condition—proof, uncirculated, very fine, fine, very good, good, fair, and poor. Radios do not have that. Of course, a seller may call a coin fine when it is only very good, and a buyer may call a coin very good when it is fine, but with radios you just look inside to see if it is all there.

Miniature railroad equipment has a code which requires any repair that has been made has to be indicated. Automobiles, in judging contests, when the repair part is not original, lose points. Radios do not, and an orange drop Sprague capacitor does not look right in the chassis of either an antique radio or television. Many of these sets are sold at places where you cannot even plug them in to see if they work.

There are seldom any bargains for seasoned collectors. There is the elderly woman who has just lost her husband and wants to sell his collection and the eager buyer who does not want, and cannot buy, all of it. He would like a couple of the rare pieces or models at a very reasonable price. When the rare items are missing, the best bet is an auction sale because the attraction for a private sale is gone.

A seasonal collector will find he needs friends to help him. When you work alone you drive all over when you hear of a rare item, and often find it was misrepresented, not rare at all, or the person selling it has a high price and thinks it is worth much more than it is. Working together with other collectors is still the best way to make a collection grow larger and better.

Collectors should not talk about their collections to neighbors, to the man in the street, and in public places. Someone may pay them a visit when they are not home. Housebreakers may not want a collection, but they certainly tear everything apart looking for what they do want—and think is there—money.

"The Editor"

Old-timer's Notebook

James A. Fred ©1985 J.Fred

Dear Old-Timer:

I have a question. I have an electrodynamic speaker that I've had a new cone installed in. The reconing people disconnected the hum-bucking coil and I wonder which end of the hum-bucking coil connects to which end of the speaker voice coil?

A. I know the theory behind the hum-bucking coil but never thought much about how it was connected. I decided that the best thing to do would be to consult a reference book.

The only reference book I had that mentioned the subject was a book titled "Radiotron Designers Handbook", Fourth Edition, published in 1935 in Sydney, Australia. I will quote a short paragraph on page 840 titled, "Hum-Bucking Coil."

"Some electro-magnetic speakers are fitted with a hum-bucking coil connected in series with the voice coil such that the field coil induces equal hum voltages in the voice coil and in the hum- bucking coil. By connecting the hum-bucking coil in series opposition, the hum due to AC ripple in the field is canceled out."

I realize that this doesn't answer your question directly. If I were you I would connect the hum-bucking coil in series with the voice coil, and with no signal present, I would listen carefully or connect a sensitive AC vacuum tube voltmeter across the speaker voice coil, and measure the AC hum. I then would connect the opposite end of the voice coil to the same end of the hum- bucking coil and again listen or measure the hum as before. The connection that gives the lower hum reading would be the one to use.

Q. When I restore an old radio I do not like to use modern capacitors or resistors. The small capacitors are dipped in blue, brown, or orange plastic and make the old radio look strange underneath the chassis. The same problem also exists with electrolytic capacitors. I restore a lot of small table radios made from 1930 to 1935. Many of the 4 and 5 tube radios had the filter capacitors and audio output cathode bypass capacitor placed in a wax-filled cardboard box. Since I cannot buy anything but tubular electrolytics, the appearance of the whole chassis is ruined. Also the larger cathedral radios, especially Philcos, have aluminum can electrolytics. I have the same problem when replacing resistors.

How should I handle these problems when I restore an old radio?

A. Since most of my radio repair work has been for people who are not collectors, I seldom have these problems. Most of my customers just want the radio to play and aren't concerned with under-chassis appearance. However, I have done some thinking along these lines.

First let us consider the aluminum can electrolytic. Usually I simply solder tubular replacements under the chassis, after unsoldering the defective aluminum can capacitors. I always leave the aluminum cans in place so the top of the chassis will look original.

A few times when the set owner didn't want tubular electrolytics under the chassis, I put new capacitors into the old cans. Now this involves quite a bit of work. First you must clean out the old can so you can reuse it. Some cans have tops that can be removed, but cans that are impact

extrusion will be in one piece. You may have to cut this type open with a hack saw. After you open the can, set it on a hot plate and soften the pitch that fills the can. At this time you should be able to take a pair of pliers and pull the old capacitor assembly from the can. Using a solvent such as Chlorthene will remove all remaining pitch. After you put the proper number of new tubular electrolytics in the can, you can stuff polyfoam pellets in and seal it with black plastic body putty. I've found this to be much easier than pouring hot pitch back into the can. Don't forget to solder the proper colored hook-up wire to the individual capacitors in the can.

As for improving the appearance of paper dielectric by-pass capacitors, I buy small diameter phenolic tubing or make tubes from gummed Kraft paper tape. I put the new small capacitors into the tubes, stuff paper into the ends to hold the capacitors in place, and pour warm wax into the ends of the tubes so the capacitors will look like old ones. You could also clean out the old capacitor tubes and reuse them. To finish the look of old capacitors, I had some rubber stamps made with the more common capacitor values and test voltages and used the stamps to mark the new tubes.

A different problem is the cardboard box type that has several capacitors inside. Here is how I handle this problem. I take an old manila folder and lay out a pattern of the box I want to replace. I carefully cut out the pattern and crease the cardboard where the bends are to be made. I cut notches in the right places and fold the box to look like the one in the old radio. You should glue, cement, or scotch tape the box together. Put the proper number of electrolytic capacitors in the box with proper colored leads. Cut notches in the box corners for the leads to come out. Now how do we simulate the wax fill and impregnation of the box?

There are special waxes for this job, but I don' know where to buy small quantities so I bought a pound of beeswax, from an artists supply house, and a hot pot at the drugstore. You will need to control the temperature of the hot pot with a variable voltage transformer or power rheostat. You can attempt to fill the box with wax or you can dip the whole box assembly in the warm wax. If you want to mark values on the box, do it before dipping the box. It will take some experimenting to get the box just right, but the finished product will be worth it.

There are also the round tubular cardboard capacitors that are mounted on top of the chassis. These boxes usually have spade lugs riveted to opposite sides of the open end. You can melt the wax or pitch out of the cardboard tube and use it to refill the tube after you have put the proper new capacitors into the tube. Be sure and use the proper colored hook-up wire for the capacitor leads.

Using these suggestions I am sure you will be able to make replacement capacitors that look original.

As to your second problem concerning resistors I am afraid this is a more difficult problem. First you will find many different kinds of resistors in the old radios.

1. Gridleaks
2. Phenolic strips with space wound resistance wire wound on the form, i.e., resistors found in the A K metal box sets.
3. Cement coat resistors such as those used as ballast resistors in A K radios.
4. Line ballast resistors made by winding resistance wire on notched mica cards, i.e., those inside a metal can with Majestic radios.
5. Vitreous enamel resistors.
6. Resistance wire wound on a phenolic strip, wrapped in asbestos paper, and encased in sheet steel, i.e., a Candohm resistor made by Muter.
7. The micamold black plastic molded resistor that looks like a mica capacitor.
8. Then there was the extruded carbon rod terminated by wrapping buss

wire around each end and dipping the wire in hot solder. The completed resistor was dipped into paint and value coded with paint spots.

There are probably many other types that I can't recall.

You can see that making replicas of these resistors could be quite time-consuming. Point number one, Gridleaks, was covered in a previous column. Point number two, this brings up the problem of finding the proper size and kind of resistance wire. This problem was also covered in a previous column. Point number three, the cement coat resistor, is almost impossible to duplicate in the home workshop. Point number four, if the mica card is intact, you could rewind this type. The rest of the resistors can be replaced with more modern wirewound ceramic form resistors.

Now a word about the carbon rod resistor. There were several different types of carbon composition resistors. Most were made by mixing carbon black with a binder and molding or extruding them into a rod. The wattage depended on the length and the value depended on the amount of carbon black. You can simulate this type of resistor by using small diameter phenolic tubing or by drilling a hole in a solid rod. You can conceal a modern carbon resistor inside the tube or rod. By using a small paint brush and tubes of artists oil paints, you can make them the proper color and put on the dots for the color code. Since the older radios used carbon resistors with a 20% tolerance, it isn't necessary to replace them unless they deviate more than 25% from the marked values.

That's all for this time. Keep the cards and letters coming and we will answer more question next time.

James Fred
RI Box 41
Cutler, IN 46920

OUR NEWEST MEMBERS

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Reece A. Scott, Florence, NJ
Reinstated:
Roy Tucker, LaMirada, CA
Olgierd Lindan, Cleveland, OH
Nick Tonkin, Vancouver, WA
W.J. Scott, Winniepeg, Manitoba, Canada

Recent Deaths
Stan Novak
John Kent Allison

All ads and Swap Shop items are printed in the Gazette free of charge. We do ask that you write your ad on a separate sheet of paper, type if possible, or print, and be sure to include your name and address. We reserve the right to edit all ads. ARCA is not responsible for any transactions, of course.

FOR SALE: EICO Model 710 grid dip meter with 8 plug-in coils, $12.00. Also fifty #27 tubes, $1.00 each. Daniel Gaidosz, 342 West River Road, Orange, CT 06477

FOR SALE: 7 Deforst HC coils (mounted) $5.00 each. 2-WD 12 tubes, $30.00, 1929 QST (except Nov.) F.W. Chapman, Apt. B218, 1130 N. Lake Parker Ave., Lakeland, FL 33805

WANTED; 3 1/2 inch diameter white porcelain rheostat for DeForest gear. Trade hard-to-find tubes such as Wunderlich or W.E. or cash. Ross Smith, 1133 Strong Ave., Elkhart, IN 46514.

WANTED: Old tube hifi equipment, magazines, manuals, etc., working or not, complete or parts. Have early tubes to trade or will buy outright. Jack Smith, 288 Winter St., N. Andover, MA 01845 (617) 686-7250.

FOR SALE/TRADE: Philco 70s, 90s. Erla Clock Cathedral, AK 447, Rember Aztec Cathedrals, German sets.
WANTED: AK cathedral 558 and breadboard or parts. All foreign radios, tube type hifi equipment. Pilot radios, unusual and large shortwave sets. Bill Moore, 1005 Fieldstone Ct., HSV AI, 35803. (205) 880-1207.

WANTED: Peter Pan Radios by Jackson Bell; Philco 20B and 70B; Majestic 370. Don Hames, 7700 Reynolds Ave., Bakersfield, CA 93307 (805) 845-2426.

WANTED: Voltmeter for Kennedy 30, type 435; Crystal holder for Steinite.
FOR SALE: Thompson N-Dyne, $60; Globe Duodyne 900, $180; Federal type 140 (not wired), $95. All in excellent condition. Everett Ludley, 301 Edgewood Dr., Webster City, IA 50595 (515) 832-3763.

FOR SALE: 1988 Art-Deco Calendars with many color pictures of plastic collectible radios from the book RADIOS The Golden Age by Philip Collins. $11 postpaid. The book is due in October and you can reserve or order a copy by sending $29 for a postpaid hardback or $18 for a postpaid soft cover version. A must for every collector's library. Your check or MO will not be cashed until the book is shipped if it arrives before received by me. Stan Lopes, 1201-74 Monument Blvd., Concord, CA 94520 (415) 825-6865.

FOR SALE; GA and RA-1 Arcturus Blues, Radio Journals.
TRADE: Ultra Skyrider, WD11s, brass and bakelite. Floyd A. Paul, 1545 Raymond Ave., Glendale, CA 91202 (818) 242-8961.

WANTED: ABC battery eliminator. Philco has storage battery (glass) with trickle charger electrolytic rectifier for "B" and AC battery. Radio Receptor Co. battery eliminator known as "Powerizer. Copy of manual for "Sky Buddy." Source of black crackle or wrinkle paint. IF transformer for Victoreen super het, Coil No. 170. Video module for 70 Series Dage Video Camera. Coils for National SW3. T.A. Drogaski, 507 Coal Valley Road, Clairton, PA 15025.

FOR SALE: WD-11 replacements. NOS Western Electric 215-A (VT-5) tubes mounted on WD-11 bases. Filament 1.1 volts .25 amps same as WD-11, same vintage note tip at top. Each tube tested before shipment. $15 each. Can do same for WD-12, WX-12 on your dud base. Also for UV-199, but use only 1 1/2 volts on filament.
WANTED: Radiola Special two tube set. I'll pay $25 finders fee, you find—I buy. Charlie Rhodes, Journey's End Rd., South Salem, NY 10590 (914) 533-2503.

FOR SALE: 12UP4BGE CRT; Symphonic TPS-5050 "Minni TV;" Emerson multicolor bakelite radio, exc.; Grundig 970 EES AM/FM/SW, exc., S-38C Hallicrafters, exc; Guilo "Grafonola" radio, superb. Charles Harper, 2081 Harmony Court, Lexington, KY 40502 (606) 268-8549.

FOR SALE: RCA Radiola 60 super heterodyne Model AR-954; Radiola loudspeaker Model 100. Deborah Pickwick, RD9, Mount Trailer Park, Binghampton, NY 13901.

CONGRATULATIONS: The Mid-Atlantic Antique Radio Club has announced that current membership now exceeds 400 members! They started out in July 1984 with just 15. The excellent articles in their monthly newsletter has led to this growth. Especially those of Ed Lyon who has done exceptional research for material. Annual dues $10.00 to the secretary—Brian Bellinger, 616 Nelson St., Rockville, MD 20850.

FOR SALE: A number of fine radio publications are now available through the West Virginia Chapter of ARCA. Write us for current list. Antique Radio Club of America, Inc., 4204 Thorn Apple Lane, Charleston, WV 25313.

WANTED: Any early spark gear heavy duty keys—components—or electro importing items. F.A. Nichols, 720 E. Eldorado, Appleton, Wisconsin 54911.

WANTED: Am always on the lookout for Paragon sets and parts. Also any DeForest or WWI military receivers. James McKinnon, 605 N. Bridge St., Bridgewater, NJ 08807.

FOR SALE: Have available Atwater Kent breadboards, any size, boards only, finished or unfinished. Send SASE for list of custom woodwork items. Looking for AK components. Lawrence D. Barry, 212 N. 6th St., Chamberburgh, PA 17201.

FOR SALE: Number of sets, parts components, books, of early manufacturers. Send SASE for current listings. Andrew Mooradian, 5 Priscilla Lane, Winchester, MA 01890.

FOR SALE: Our latest catalog shows a number of new additions. Tubes, parts, kits and many useful items for collectors. Write us your needs. Antique Electronic Supply, 688 W. 1st St., Tempe, AZ 85281.

WANTED: Zenith table radio Model 11-E circa 1927. Also a Radiola 100 speaker in working condition. Steven Cavallaro, 1109 Sycamore St., Haddon Heights, NJ 08035.

WANTED: Two sub panel audio transformers with continuity to repair an old set here. Hugo Castelli, 1406 E. 5th Ave., Joiliet, Illinois 60433.

WANTED: 1 radio tuning dial for a 1941 Philco, model 323T (or 42-323). 1 radio tuning dial for a RCA Victor, model C7-6. Mark E. Webb, Box 2617, Palmer, AK 99645.

WANTED: 1935 Midwest Imperial in FOs page 185.
FOR SALE: 1988 Olde Tyme Radio Service Directory, $2.40 ppd. Andrew Mooradian, 5 Priscilla Lane, Winchester, MA 01890.

NEW: Replica catalogues now available such as DeForest D 36 pages, $6.50; Magnavox 1921 general catalog 30 pages, $5.50; RCA, 1926 catalog, unusual, 20 pages, $4.50. Also, send for listing of other rare radio catalogs on hand. Arthur Aseltine, 345 Glenwood St., Ann Arbor, MI 48103.

WANTED: Pilot 3" TV, restorable condition, good CRT, cabinet and all knobs. Charles T. Mooney, 12309 Stafford Lane, Bowie, MD 20715.

WANTED: Rider manuals 21, 22 & 23, knob for the "wave change switch" on a E.H. Scott all-wave 15. All letters answered, postage returned. Leonard J. Arzoomanian, 61 Columbus Ave., North Providence, RI 02911.

WANTED: Schematic, alignment info, manual for National NC2-40D receiver. Copy OK. Jack R. Bowers, RR2, Box 212, Highland, IL 62249.

WANTED: Manual for General Radio Company standard signal generator model 605-B. Itsuo Yano, 80 Lehua St., Kahului, HI 96732.

FOR SALE: Radio related tie clasps and lapel pins, RCA-Philco-GE and more. Send a LSASE for illustrated list. Michael S. Sabodish, 11-A Matawan Ave., Cliffwood, NJ 07721.

WANTED: Philco 116, 680, 690 receivers, preferably chassis only, w/wo spkrs. Also, the variable-selectivity IF subchassis used in above. Meissner "All-wave" front-end using three metal tubes and having a two-speed vernier drive to an oval dial. Seeking Rider vols VI & VIII. I will reply to all responses. C.A. Gehman, RFD2, Winsted, CT 06098.

FOR SALE: Zenith "big dial" console, Crosley Ace, DeForest Radiohome, books, over 100 items. Please send a business size SASE for latest catalog with photos. John Kendall, PO Box 436, Fallston, MD 21047.

Transformer re-winding service: send a SASE for into to: Peter Yanczer, 835 Bricken, St. Louis, MO 63122.

FOR TRADE: DeForest items for WWI communications equipment I do not have. Also want unusual early portables and Kellogg tube sets. Me Rosenthal, 5 The Strand, New Castle, DE 19720.

WANTED: TVs, TVs, more TVs. Paying over $1000 for any pre-war; $20–$500 for 1940s and unusual televisions. I now have over 300 TVs in a 800 sq. foot warehouse! Buy-Sell-Trade-Repair. Harry Poster, Box 1883, So. Hack., NJ 07606 (201) 794-9606.

WANTED: Zenith transistor type "Transoceanic" radio Model 7000. Have National 1931-32 "Shortwave Receivers" cat-booklet on SW-3, SW-5 and National 4590-S television receiver. Bill Wade, 657 14th Ave., Prospect Park, PA 19076.

FOR SALE: Several hundred radio tubes. Will sell the lot or individual tubes. Write to: Donald L. Taylor, RR#2 (Dobson's Corner), Salisbury, New Brunswick, Canada, EOA 3EO.

WANTED: Chassis and speaker for Majestic Model 90; have good console cabinet or will trade cabinet for similar vintage working Tombstone. For sale or trade: Hallicrafters S-120 excellent shape; Emerson table model-641, good shape; GE model-404; Philco model 42-PI-87 portable; DuMont Portable model RA-354; Western Electric 633A Salt Shaker Microphone. Bill Groves, PO Box 41248, Phoenix, AZ 85080 (602) 581-9182.

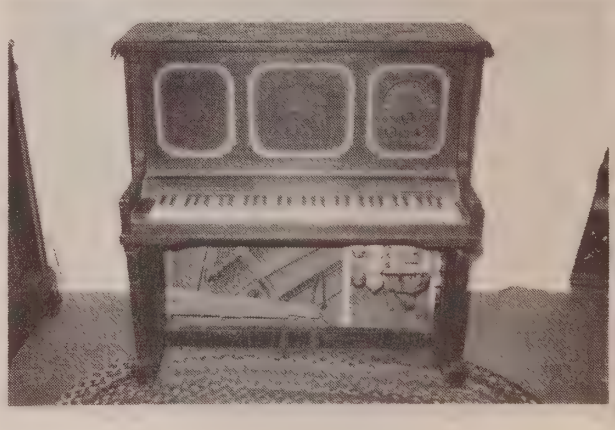
FOR SALE: Cathedrals, Zenette, Heritage, Philco 50, Aero, Glorytone, many tombstones, plastics. SASE for list. Ed Ripley, 2276 Holloway, Maplewood, MN 55109.

WURLITZER LYRIC JUNIOR PIANO RADIO

By Larry Babcock

Part of the fun of collecting Wurlitzer radios is in the unusual styles available. Wurlitzer made a grandfather clock radio and there is even a very large clock-controlled push button console made in about 1930. In this issue I would like to tell you about another unusual Wurlitzer. It is a combination set.

When Wurlitzer was nearing the peak of their radio production, they decided to increase sales by combining a Lyric radio with another product. Most companies did this by building radio phonographs but not Wurlitzer. They were a piano manufacturer and needed something that would increase piano sales. This is why, in about 1930, they came out with the combination radio/piano pictured. Apparently only a very few were ever produced, since I have never heard of another one.



The picture looks like a full size piano but in fact it is a scaled down upright standing 40" high and with a keyboard reduced to 5 octaves. It is built like a real piano and weights about 300 lbs! The harp is labeled "Wurlitzer" but the radio is not. The chassis tag reads: **LYRIC JUNIOR, MODEL P, ALL AMERICAN MOHAWK, NORTH TONAWANDA, N.Y.**

The Wurlitzer article in the Fall 1987 Gazette explained that "North Tonawanda" on the chassis label means the chassis was made in the Lyric Division of Wurlitzer's N. Tonawanda plant.

The radio controls are all remote from

the chassis as shown with the dial and knobs on the right side above the keyboard and the chassis directly below. A gear-driven shaft connects the tuning control with the tuning condenser on the chassis. The tone control switch, on/off and volume controls are connected to the chassis by a single control cable.

The chassis is Wurlitzer (All American Mohawk) model P. The schematic is printed on page 21 of the Fall 1987 Gazette. For this application it was modified to provide remote control features as described above.

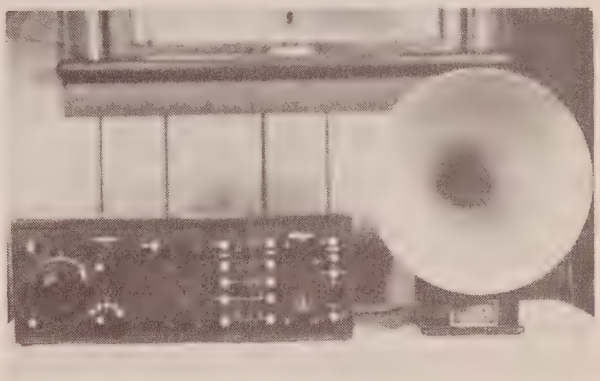
The radio has a simple 6 tube TRF circuit with 4 type 224 RF tubes, a pentode output and 280 power tube. The input to each of the four RF tubes is tuned by a 4 gang tuning condenser. The audio output is single ended. The volume control potentiometer connects into the circuit in such a way as to act both as a variable shunt between the antenna and ground terminals and also varies the cathode voltage (bias) in the first three RF stages. This chassis was built with either 25 or 60 cycle power supplies.

The 8"D speaker was located below the keyboard to the left of the radio chassis. It has no identification but was probably also made by Wurlitzer since they had been making their own speakers for about 5 years when this set was built.

All American Mohawk and Wurlitzer both used the name "Lyric" on their sets. This name was much more common than "Wurlitzer." You really have to see where the set was built by reading the chassis label to determine whether Wurlitzer built the set. Wurlitzer took the name over from All American Mohawk. How much did they take it over? They called their radio manufacturing building the Lyric Division and even named the main entrance to the plant "Lyric Avenue." It still has this name today!

I would like to hear from you if you have information on Wurlitzer radios. Please tell me about any unusual sets. All letters will be answered.

Larry Babcock, 8095 Centre Lane, East Amherst, N.Y., 14051.



DXing the Crosley 51

Thanks to the W.V. Chapter of ARCA for presenting me with the J. Albert Moore Editorial Award at this year's ARCA convention. Unfortunately health problems have interfered with the writing of these articles for the last few Gazettes. For those of you interested in the technical and historical side of DXing, be sure to look up *Broadcasting Dxing—Then and Now* by Ludwell Sibley. This article can be found in *The Old Timer's Bulletin* from August, 1987.

The Crosley 51 appears to have been manufactured from early 1924 through early 1926. Many different versions were made from an early one with a tap switch on the top of the panel to the later produc-

tion where it was moved to the bottom. Portable and fancy slope front cabinets were among the other variations. Single tube 51A matching amplifiers were also made, and one was tried with my set.

Advertising for this radio was plentiful and ranged from the subdued claim "Will bring in local stations on the loudspeaker at all times, and distant stations under favorable conditions," to the more extravagant claim of loudspeaker reception "up to 1500 miles under average conditions. Much greater range with headphones." The combination of aggressive advertising and low price evidently worked. It's likely more Crosley 51s were sold than any other small radio of the early twenties.

The circuit of the 51 is described by Crosley as "a single circuit tuner, with controls for a vacuum tube detector, which has a tickler in the plate circuit. This tickler makes the set regenerative." This circuit is different from many competitors' single circuit regenerative receivers. It uses a book condenser for tuning, and an arrangement of two spiderweb coils which control regeneration and assist in tuning. The tapped coil serves as a combination antenna and grid coil. As a consequence, the receiver slightly changes wavelength coverage on antennas of different lengths. The other coil serves as the tickler and is mounted on a slider to control regeneration. Crosley used this same tuning arrangement in all of their regenerative receivers without RF amplification. All that changed was the model numbers and sometimes the audio amplifier section. The 51 also has a "one-stage audio frequency amplifier with transformer coupling." Transformer coupled audio was a standard arrangement and it was used by most early radio manufacturers. However, Crosley used a high ratio 9 to 1 transformer, when most other companies used 3.5 to 1. This gave high gain but caused considerable distortion.

Crosley instructions showed three ways to connect the 51. A universal rheostat was used and the differences were due to the type of tubes being used. Connections for UV-99s and WD-12s used a plate voltage of 22 volts for the detector and 45 volts for the amplifier. A C battery was recommended. The 01A connections showed plate voltages of 45 and 90 volts respectively, with no C battery. **Caution:** there is an internal connection from C– to A– which must be broken to use a C battery. I tried the 51 all three ways and also tried a C battery with the 01As. As expected, the performance was best with the 01As, and this is the way the set was tested.

Crosley's tuning instructions are very simple: place the tap switch on the center tap and adjust the rheostat to hear a hissing noise. Pull the Varind Knob (regeneration control) about three-quarters of an inch from the panel. Turn the condenser dial and listen for a whistling or squealing sound. Adjust the Varind Knob to clear the squeal up and again adjust the condenser and rheostat controls. Although the above directions are condensed from the original, nowhere does Crosley admit that tuning in this manner would have interfered with your neighbors' radios. However, you are told it is "very desirable" to learn to tune the radio just below the squealing point.

There are some problems involved in using the Crosley 51, but when the cost is taken into account, the performance is very good. The $18.50 that purchased this two-tube radio would not have bought a crystal set from many other manufacturers. Local stations gave good volume on the loudspeaker, and the addition of the matching amplifier helped considerably in hearing more distant stations. Unfortunately, the distortion caused by Crosley's 9:1 audios was disturbing, and the addition of a C battery gave only a slight improvement. The 51 was one of the more sensitive radios I have used, but was not selective enough for today's crowded airwaves. In the twenties this probably did not cause much of a problem. During the daylight hours a local station, WBRW, almost completely stopped all other reception. If you tuned too close to the oscillation point, just moving your hand could start the set

squealing. The 51 had a very wide tuning range, and on my antenna could tune up into the shortwave bands. Many times in the past I have received good shortwave reception on the 51, but during the time period the radio was tested for this article, only hams and carrier waves could be heard.

A beginning radio fan with limited funds would have been happy with the Crosley 51. In view of the distortion and other problems, it is surprising so many were sold. People with money could have bought a much better radio in 1924, never mind 1925 or 1926.

James P. McKinnon
605 No. Bridge Street
Bridgewater, NJ 08807

RECEPTION RECORD FOR THE CROSLEY 51-51A

Tap	Dial	kHz	Station	City, State
1	97	540	CJSB	Ottawa, Ont.
1	95	560	WFIL	Philadelphia, Pa.
1	90	570	WMCA	New York, NY
1	88	580	WHP	Harrisburg, Pa.
1	80	610	WIP	Philadelphia, Pa.
1	78	620	WSKQ	Newark, NJ
1	70	660	WNBC	New York, NY
1	68	670	WMAQ	Chicago, Ill.
1	63	710	WOR	New York, NY
1	53	770	WABC	New York, NY
1	48	800	CKLW	Windsor, Ont.
1	40	840	WHAS	Louisville, Ky.
1	34	870	WWL	New Orleans, La.
1	33	880	WCBS	New York, NY
1	29	890	WLS	Chicago, Ill.
1	25	900	CHML	Hamilton, Ont.
2	38	920	CBO	Ottawa, Ont.
2	36	930	WPAT	Patterson, NJ
3	60	950	WPEN	Philadelphia, Pa.
2	28	1000	WCFL	Chicago, Ill.
2	27	1010	WINS	New York, NY
3	43	1070	WKMB	Stirling, NJ
3	42	1090	WBAL	Baltimore, Md.
3	38	1110	WBT	Charlotte, NC
3	30	1170	WBRW	Somerville, NJ
3	24	1180	WHAM	Rochester, NY
3	5	1210	WCAU	Philadelphia, Pa.
4	43	1350	WHWH	Princeton, NJ
5	90	1370	WTKY	Tomkinsville, Ky.
4	34	1450	WCTC	New Brunswick, NJ
5	87	1490	WBCB	Levittown, Pa.
5	80	1520	WKBW	Buffalo, NY
5	79	1530	WCKY	Cincinnati, Oh.
5	81	1540	WSNI	Philadelphia, Pa.

Note: When stations are received on more than one tap, only the first tap is listed. Taps are numbered from right to left looking at panel.

A SPECIAL MAGAZINE REVIEW

By Lloyd McIntyre

This fall, while spending time at some rather large flea markets, I came across 18 issues of *Popular Mechanics* magazines. It is always interesting to look at old magazines, but there was something very special about these. Some were dated from 1924 through 1927. I picked one issue—February, 1927–to review with you.

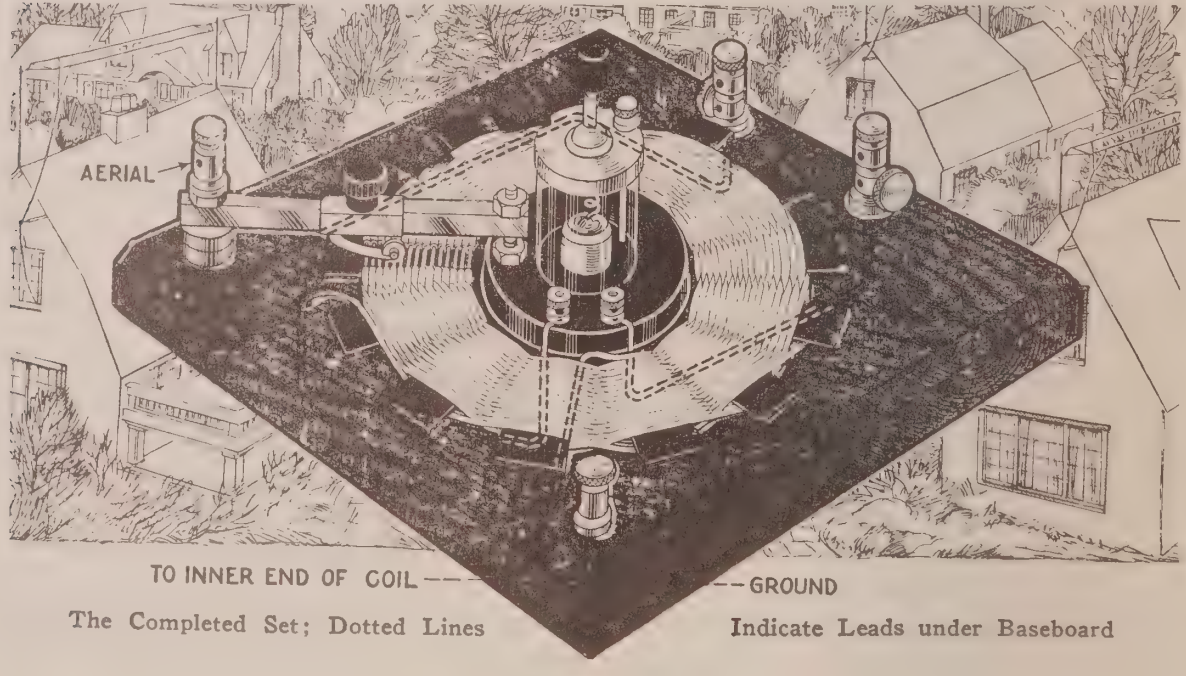
During this period of time, America and the world were becoming very excited about an entertainment concept called "radio." *Popular Mechanics*, being the information source for new technology, spared all the space necessary to help educate the public about this new electronic marvel.

The magazine is the size of a *National Geographic*, but contains over 366 pages. I counted over 36 pages or 10% of the magazine that had information in the way of advertising or construction projects. The advertising pages, half in the front and half in the rear of the magazine, are numbered consecutively by themselves. The information section starts after the first half of the advertising with page number last used in the previous issue. A little confusing perhaps as magazines today give you a dose of advertising on every other page and number from 1 up to the last page.

There are some great ads; such as, Eveready, Philco, Daven Radio, Miraco, Westinghouse, Amperite, Burgess, Aero, Rosco, Marwood, Crosley and Ozarka. The last of which is a full color, full page back cover ad. There is a super two page article on "A Crystal Set For The Boy Builder" by Will H. Bates. This is as nice a homebuilt as I have ever seen. The pictures are of the best detail. I wish I had the time to head for the shop and build it!

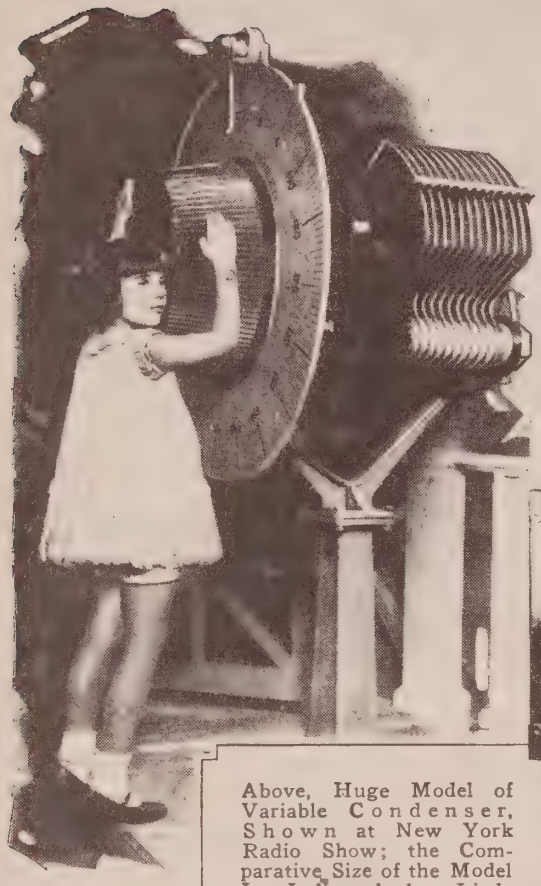
The next article in this 14 page series is the addition of a power amplifier to modernize the old TRF set. Next, "Twelve Dollars Builds A B-Eliminator" by Arthur Kennedy. 5 pages are dedicated to this extensive project in great detail. A picture of Henry P. Englehardt, a Chicago artist, putting the finishing touches on an elaborately decorated portable set. S. S. Kirby of the U.S. Bureau of Standards, is shown conducting a test to determine the cause of fading signals.

It is an almost endless detailed documentation of radio history. This W. Va. ARCA Chapter purchased 14 volumes and the ones I have read are just enormous sources of information. Look at these magazines, if you are privileged to see them. It is my first encounter—they are not likely to show up very often, but they are worth the investment!



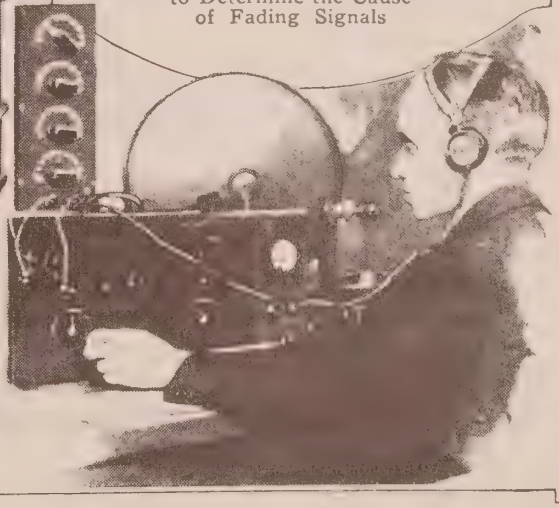
The Completed Set; Dotted Lines Indicate Leads under Baseboard

Facts and Fads for Radio Fans



Above, Huge Model of Variable Condenser, Shown at New York Radio Show; the Comparative Size of the Model Is Indicated by Little Miss Betty Sargent Who Is Trying to Operate It

Henry P. Englehardt, a Chicago Artist, Putting the Finishing Touches on an Elaborately Decorated Portable Set; Below, S. S. Kirby, of the U. S. Bureau of Standards, Is Shown Conducting a Test to Determine the Cause of Fading Signals



Left, Six-Tube Radio Set, Built in a Baby-Grand Style; It Fits into a Corner and Attracted Favorable Comment at Radio Show in Chicago

AWA 1987 OLD EQUIPMENT CONTEST
CANANDAIGUA, NEW YORK

Judges: Geoff Bourne
Charles Days
Alan Douglas
John Drake
John Drew
Bill Holly
Orval Parker
Ross Smith
Ralph Williams

Class 1—Passive Detectors (6 entries)

1.	Jim & Felicia Kreuzer	Marconi Collection
2.	Mike Feher	Seirt WWI Receiver
3.	Larry Babcock	Receptor Telegraphique
3.	John Weisner	Radionette
	Bob Dennison—Special Award	Radio Shop Display

Class 2—One and Two Tube Receivers (9 entries)

1.	Franz Mock	Lizenz-Schrack (German)
2.	Andre Chompret	Microdion French
3.	Charles Stinger	Bruno
	Ross Smith—Special Award	DeForest PN Replica

Class 3—Three Tube Receivers (3 entries)

1.	Mike Katzdorn	Jones 1 Tube & Amp
2.	Jerry Finamore	Penn Wireless
2.	Ross Smith	Reinartz with Coil
	(no third)	

Class 4—Four and Five Tube Receivers (10 entries)

1.	Ron Frisbie	ABC Standardized (Wireless Equip. Co.)
2.	Floyd Bennett	Radiola VII
3.	Robert Lozier	Nora
3.	Robert Trauterman	Radiola 20 Desk w/ Antenna Lamp

Class 5—Receivers Having Six or More Tubes (8 entries)

1.	Walter Asherbraner	Federal 61
2.	Chet Wisner	General Instr. Corp. Ducrett Superhet
3.	Mike Feher	1932 Homebilt High Frequency Comm. Receiver
	Robert Hager—Special Award	

Class 6—Spark Xmitters & Rel. Equipment (2 entries)

1.	Mike Feher	British Aircraft Spark Xmitter
2.	Lawrence Chestnut	Bell Rotary Quenched Gap

Class 7—Vacuum Tube Xmitters (3 entries)

1.	Ralph Thorn	Pacent/Grebe CTX1
2.	John F. Rollins	TX: 47-10-211 Breadboard RX: Nat. S103
3.	Allen Breiner	2 Tube TNT

Class 8—Vac Tubes, 1905–1918 (1 entry)

1.	Larry Babcock	Spherical Audion

Class 9—Vac Tubes—Foreign Before 1930 (2 entries)

1.	Max de Henseler	Loewe Early Tubes
2.	Franz Mock	Telefunken Tubes

Class 10—Vac Tubes—XMT Before 1940 (2 entries)

1.	Alan Douglas	Marconi CAT Valve and Catkins
2.	Lawrence Chestnut	1920 DeForest Type H

BEST OF SHOW—Marconi Exhibit
Felicia and Jim Kreuzer

SPECIAL AWARDS:

Matlack—John F. Rollins

Display—Max de Henseler—Early Loewe Tubes

Burns

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A Reproducer that Satisfies. Large size unit. Aluminum Sound Column. Handsome pyralin bell. Convenient adjuster.

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No. 205D Mahogany Tinted Flare $25.00
No. 205P Mother-of-pearl Flare . $30.00

American Electric Company

State and 64th Streets : : Chicago

FIFTY YEARS OF CATALIN RADIOS

Ed Lyon

During the middle of the 1930s, the Catalin Corporation began a new manufacturing process for producing durable, non-melting, odorless, and tasteless plastics. The objective was to make extremely attractive household and personal items of the new plastic they called Catalin. The basis of the new material was the same old phenol-formaldehyde resin that had made "Bakelite" a word as commonplace as "Jello." The novelty, though, was in the manufacturing method, one which yielded a phenolic plastic as colorful and glossy as any gemstone. While there is some controversy about who first tried casting the liquid phenolic resin, it was Catalin who first advertised the plastic, fashioned into jewelry, clock-cases, toilet articles, and kitchen items.

The traditional "Bakelite" phenolic was made by injecting the powdered resin, coloring agent, mold release agent, and filler material into a "pump," which compressed the mixture into a heated (and very robust) steel mold, using pressures of up to 10,000 psi; this process cured the plastic almost instantaneously. But the Catalin process called for pouring the liquid resin, specially neutralized, and with finely dispersed water entrained, into thin lead molds, after which came five to twelve days of curing at elevated (175°F) temperatures. Thus, the new method resulted in CAST phenolic plastic, while the traditional phenolics were MOLDED.

Even after release from the molds, the two differed in treatment. The "Bakelite" phenolic emerged shiny and finished, except for possible "flashing," thin, fragile excess webs of material formed at the mold seams, easily broken off and buffed over. Meanwhile, the Catalin piece had to be "case-hardened" in the oven, then tumbled with abrasives, then with waxed pegs, then buffed, requiring two more days.

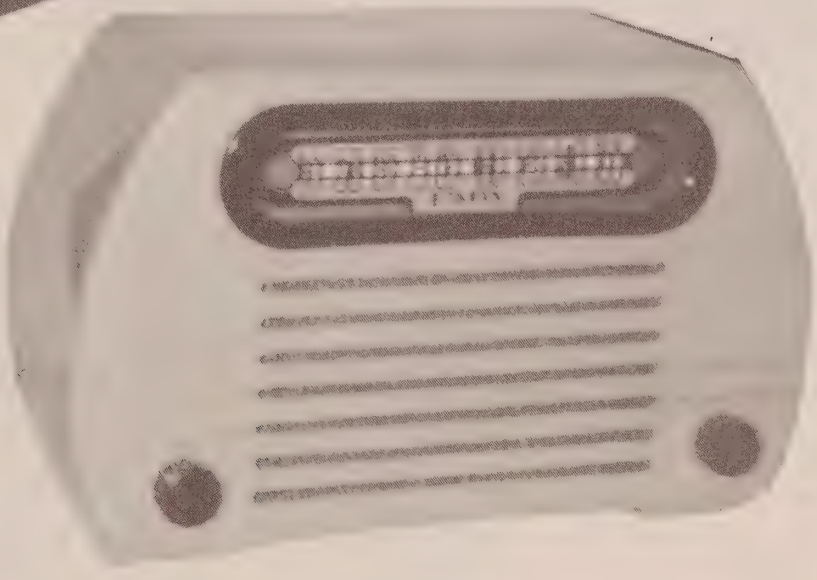
The tremendous difference in manual labor required to produce the two plastics created a condition wherein the Catalin item would cost, naturally, four to six times as much as the same thing in "Bakelite." But, what a difference in appearance! Catalin plastics are brightly colored (with a few exceptions), thick-walled, translucent, and quite rigid, while the "Bakelites" are opaque, dark-colored, and thin-walled. The more modern styrenes are brightly colored, but are soft, meltable, and very thin- walled.

At this point I should hasten to note that I use the term "Bakelite," in quotes, to mean the commonplace molded phenolics, no matter who the manufacturer might have been, while "Catalin," in quotes, means the cast phenolics. This may avoid confusion, because, soon after Catalin announced their new plastic, the Bakelite Corporation duplicated the stuff, which they called "Bakelite Cast Resin." They were followed by a host of others, including Monsanto's "Opalon," Marblette's "Marblette," and Catalin's "Prystal." All these manufacturers sought to create very colorful, jewel-like objects for the home, and such industrial items as pilot-light jewels, switch handles, cabinet pulls, warning signs, and colorful trim. This bright plastic material didn't take long to get the attention of radio cabinet designers.

These radio designers had just discovered "Bakelite" as an ideal radio cabinet material a few years before, and, by 1936, many manufacturers had already started to use urea-phenolic molded resins, which very closely resembled the "Bakelites," except that they could be made in any color, especially "ivory." Now, they had the opportunity to complement their line of wooden, "Walnut Bakelite," and "Ivory Plastic" radios with "the new Catalin plastics," in glossy, marble-like material with some "heft." These radio cabinets were heavy, usually being three-sixteenths of an inch (or more) thick, in contrast to the molded cabinets' thin walls.

International was one of the earliest users of "Bakelite" cabinets in their 1934 and 1935 Kadette and Kadette Junior radio series, and they were also quick to pick up on the urea plastics. They made a

711



652

5F60

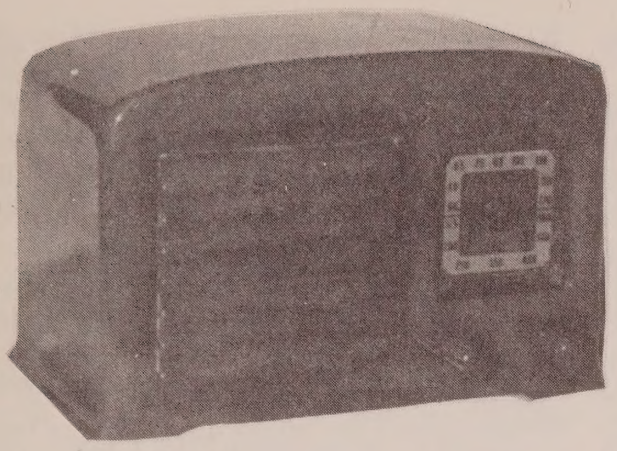
1935 version of the Kadette in a choice of either marble-like brown-and-ivory urea or brown molded phenolic. But the model they hoped would capture the sophisticated "Art Deco" audience was 1937's K-28 Kadette Clockette, a cast phenol- (or urea-) formaldehyde table model radio. It was available in "blue marble-like," Brazilian Onyx (green), or red jewel-like finish, with a clock-type dial. The speaker played through the perforated dial center area. Three wooden models of this radio were also offered.

But the radio manufacturer best known today for Catalin radio cabinets is FADA. The FADA designers saw the opportunity to help International capture the market, and rushed together the 5F60 radio, which sported a genuine Catalin cast phenolic box housing a brand-new chassis, which used the new 6A8 converter tube in an AC/DC 300-milliamp string of five tubes, plus a resistance line cord. Although the cabinet came in bright colors, such as alabaster with blue or red trim, onyx, blue marbled, and solid alabaster, the cabinet shape was plain, being a simple rectangular box with speaker louvers. It was what we refer to as a plain "right-hand-drive" (RHD) layout: dial above two knobs on the right, speaker on the left, one employed by every manufacturer imaginable for their "cheap" line of table-models.

In an attempt to lower costs, FADA engineers began to dredge up existing chassis designs to fit the designers' new Catalin cabinets, ones having some curves, and a little pizazz. The result was a series of sets having model numbers like F45, F55, and 5F50, all RHDs with hanks of wire for antennas, in AC/DC four- and five-tube circuits. Some of these were rather old TRF dogs, using 6D6 and 6C6 tubes, and the chassis had to be stepped to make room for these tall tubes. A similar circuit, but with the power line coupled to the input stage, for an antenna, appeared in this 1938–1939 period, in the model 53. Then came more RHDs in more rakish cabinets, like the model L56, a superhet with a FADAScope loop antenna and deep, deep cabinet (to get some spacing between chassis and loop), and the 120, using a cut-down cabinet from the L56, and a cheap TRF circuit. All these models, plus a few more obscure ones, were thrown into three basic cabinet designs, with trim variations, and variable cabinet depths, etc. These RHDs are shown in figure 1, a montage of FADAs from Mark Woolley's collection.

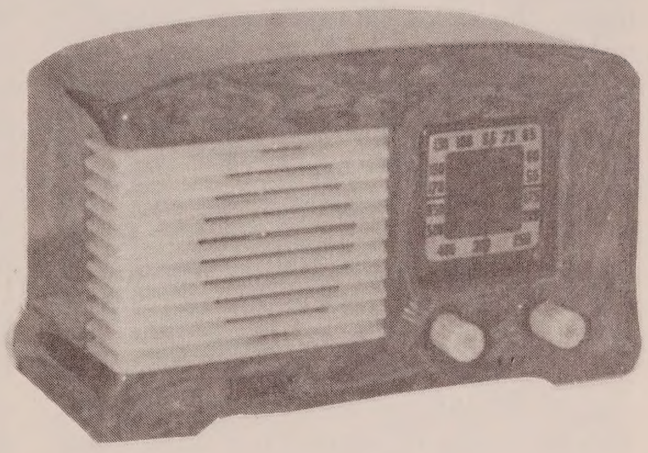
But the "darlings" of the FADA collections are the later Catalins which departed from the old RHD layout. These included the 200 series, also called the model 115, or Streamliner (now referred to as the "Bullet"), the 252 Temple (often called the "Trapezoid"), and the 700. These pre-WWII designs just made it to the market as the war warmed up, and by 1942, FADA was out of the home radio business for the duration. The same radios came back after the war, as the models 1000, 652, and 845, respectively. A few wrinkles were added, such as contrasting-colored panels for the speaker grilles (in the 1000 and 652), and the 652 was also produced in a two-band version, the 659, with the bandswitch operated by a lever sticking out of the masonite back of the set. Meanwhile, a model 711 emerged just after the war, which, with the model 845, used non-Catalin plastic knobs and handles. The 845 was eventually offered to Lafayette Radio for sale under their own label, Lafayette-Concord, in 1948. This marked the last gasp for the Catalins. The manufacturing process was simply too expensive to make the product competitive, especially when the post-war "soft" plastics (vinyls, styrenes, and methacrylates) were so much less expensive, and were also colorful. Figure 2 shows this last group of FADA sets, also from Mark Woolley's collection. The "Bullet," by 1946, was available in the following colors: alabaster; alabaster with red trim; blue with alabaster trim, onyx (a pale greenish translucent color); onyx with alabaster trim; and burgundy with alabaster trim.

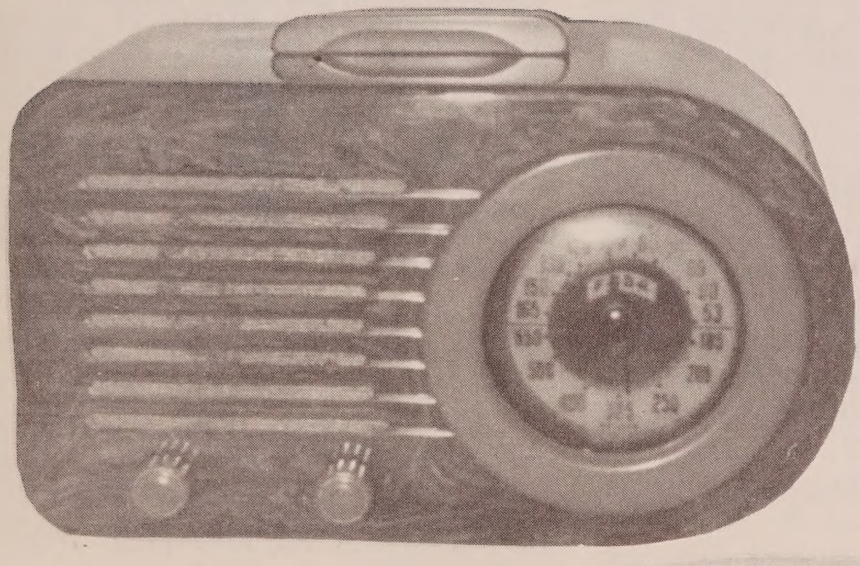
Then, how does one explain all the "butterscotch" and green colors found in



5F50, 53
F-55

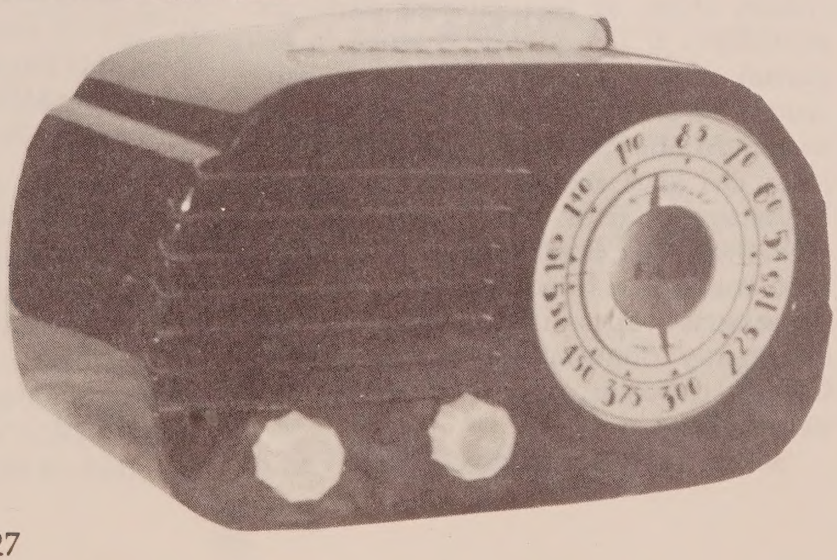
120





1000

700, 845



these radios? Age. The passage of 40 to 50 years has not been kind to Catalin colors. The colorants used were quite susceptible to ultraviolet light attack, as well as chemical attack from atmospheric constituents. The color changes have been most severe in cases where the cabinets became heated over a protracted time, such as in an attic, or in the cabinet area directly above the power tubes. Interestingly, the color changes are generally only skin deep, and can be removed through careful abrading and buffing. By spending from 10 to 50 hours of such effort on a butterscotch "Bullet," it will be restored to the original alabaster, a white-on-white translucent color. The green cabinets often found will restore to the original blue, which Catalin called lapis lazuli. Red cabinets in the "Bullet" are nearly unknown, and might exist only in the model 115 pre-war version. The 652 Temple came in exactly the same color schemes as the 1000.

But, you might ask, why are these radios fetching such high prices? The answer is simply scarcity. These radios were always scarce, their production runs often being only a few thousand sets. And, then, being plastic, they were relatively fragile, and their bright colors sometimes caused their premature retirement, as owners' tastes or room decors changed. But the ones which today are expensive are the ones in perfect condition. The colors may be allowed to remain faded to the "new" colors, but the mechanical condition of the cabinet, knobs, handle, trim, etc., must be intact. No cracks, chips, or mismatched parts are permitted, if the premium price is expected. And the worst of all conditions would be a "repaired" cabinet. For cements do not stick to Catalin plastic for long. (At least modern cements don't). Replacement trim pieces are available from those (like Bordonaro, in California) who make it a business/hobby to cast these parts in epoxy or polyester, but they are readily identifiable as replicas, to the Catalin collector, and they reduce the value a bit.

So if you have a cracked Catalin radio cabinet, don't glue it together. That will lower its value. Hang on to it, because soon, we may well have a good genuine Catalin cement for that cabinet. But, then should you restore the cabinet to the original colors? It depends on your objective, of course. Remember that these radios came out 50 years ago, and that was the time when the rage was a Youngstown kitchen, with its white cabinets with bright trim colors. The radio was supposed to complement the kitchen or study decor, and few butterscotches or olive drabs were called for. So if you want to get back to the original purpose and intent of the radio's makers, restore them, but if you like butterscotch or green, leave them alone.

These Catalin radios, expensive when new, bought then by only a few people thought to have bohemian tastes, have surged to the forefront of collectible radios, almost exactly 50 years after their first popularization by FADA in 1938, and are once again expensive, and are owned, in quantity, again only by a few.

(This has been a palimpsest in Catalins. It only skims the surface, and has been assembled from a series called "Catalin Corner," published monthly in the Mid-Atlantic Antique Radio Club Newsletter.)

BOOK REVIEW

INVENTING AMERICAN BROADCASTING, 1899–1922
By Susan J. Douglas 363 Pages
The Johns Hopkins University Press, Baltimore, MD
Hardcover $29.50

Inventing American Broadcasting is the product of the author's thorough and insightful research into her subject. Susan Douglas, an Associate Professor of Media and American Studies at Hampshire College, begins her account with an absorbing review of the decades that preceded KDKA's first broadcasts in 1920. Included in this review are accounts of

the publication of Maxwell's "Dynamical Theory of the Electromagnetic Field" in 1865 and its impact on the world of science, the confirmatory, landmark experiments of Professor Heinrich Hertz in 1888, and the ensuing commercially-slanted developments of Marconi in the late 1890's. That the author did her research thoroughly is evident throughout, both from the text and from the footnotes which appear in her collected "Notes," that extend in an impressive array for 31 pages at the end of the book.

Radio broadcasting's more immediate roots are traced back to Fessenden's Christmas Eve broadcast of 1906. Fessenden, using an R. F. alternator and a microphone, successfully broadcast music from phonograph records, with Fessenden himself singing and playing the violin for the live portion of the program. That Christmas Eve experiment is generally considered the first radio broadcast in American history. At about the same time, De Forest conceived of radio broadcasting and, especially after 1906, pioneered in using wireless for broadcasting entertainment to the American public. The New York Times, in its 14 February 1909 issue, quotes De Forest as follows: "I look forward to the day when opera may be brought into every home (with) news and even advertising. . ."

Further, well before Sarnoff's well-publicized "Music Box" memo of late 1916, radio amateurs were active in broadcasting voice, music and advertising to each other and to anyone with a receiver. One of these was "Doc" Herrold who used an arc transmitter for this purpose in 1914.

The book's nine chapters are assigned to Marconi and the America's Cup, 1899, 25 pages; Competition over Wireless Technology,1899–1903, 31 pages; The Visions and Business Realities of the Inventors, 1899–1905, 40 pages; Wireless Telegraphy in the New Navy, 1899–1906, 40 pages; Inventors as Entrepreneurs, 1906–1912, 43 pages; Popular Culture and Populist Technology—the Amateur Operator, 1906–1912, 29 pages; The Titanic Disaster and the First Radio Regulation, 1910–1912, 24 pages; The Rise of Military and Corporate Control, 1912–1919, 52 pages; and Social Construction of American Broadcasting, 1912–1922, 22 pages.

Author Douglas's field of expertise impels her to focus attention on the part played by the media in the "invention" of broadcasting in this country. She considers newspaper and magazine coverage one of the crucial factors in the cultural evolution of radio. She argues that the press legitimated certain uses of radio while ignoring or condemning others. The jacket notes that the press's "grand visions of radio as an instrument of American democracy and its romantic vignettes of boy inventor heroes may have decisively steered radio in the direction of mass entertainment."

This book will make a useful addition to the library of any amateur historian/collector who wishes fully to comprehend the origins of radio and radio broadcasting.

Book Review by William E. Denk, W3IGU